ABSTRACT

The present invention relates to a cutting tool insert having a substrate and a coating, the coating is composed of one or more layers of refractory compounds of which at least one layer includes a precipitation hardened $(Ti_yAl_xMe_{1-x-y})N$ based layer, where Me is one of the elements: Zr, Hf, V, Nb, Ta, Cr, Mo, W or Si, and:

- x is between 0.50 and 0.80;
- the ratio, R=x/(x+y), is between 0.50 and 0.85;
- the sum of Ti and Al subscripts, S=x+y, is between 0.7 and 1.0;
- the ratio of the peak width, $F_{10/90}$, (FW10%M or FW90%M meaning Full Width at 10% and 90% of the maximum peak value reduced with the background) measured on the 200 peak at approximately 43 °2θ (using Cu Kα radiation) of the $(Ti_yAl_xMe_{1-x-y})N$ coating, according to Fig 4, is higher than 7.5;
- the ratio between the area of the h-AlN (100) peak at approximately 33 °2θ ($=A(h\text{-}AlN)_{100}$) and the c-$(Ti_yAl_xMe_{1-x-y})N$ (200) peak at approximately 43 °2θ ($=A(c\text{-}(Ti,Al,Me)N)_{200}$) called K, i.e. $K=A(h\text{-}AlN)_{100}/ A(c\text{-}(Ti,Al,Me)N)_{200}$ K is between 0 and 0.3; and
- the layer a single $(Ti_yAl_xMe_{1-x-y})N$ (200) peak without several maxima.